

Notice of Allowability

Application No.

10/502,460

Examiner

Thinh T. Nguyen

Applicant(s)

HULSMANN, AXEL

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Jan 05 2007.
2. ☒ The allowed claim(s) is/are 1-5, 7, 8 and 10.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

DETAILED ACTION

1. This is in response to Applicant amendment on 12/13/2006 and 1/5/2007.
2. Claims 1-5,7-8,10 are pending in the Application. Applicant has cancelled claim 6 and 9.
3. The amendments to the drawings sent by the Applicant on 12/13/2006 are accepted by the Examiner.

Examiner's Amendment.

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

As per Authorization from Applicant legal representative:

Amends claims 1 and 10 as the following:

A/ Claim 1.

-- " 1. A heterobipolar transistor, comprising an emitter which includes a first semiconductor layer (9) made of a first semiconductor material and a second semiconductor layer (8) made of a second semiconductor material, a band gap value or the first semiconductor

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material being smaller than a band gap value of the second semiconductor material, characterized in that :

a sequence of n ($n \geq 2$) stacked semiconductor intermediate layers (31, 32, 33) constituted by the semiconductor intermediate layer (31) and at least one other semiconductor layer (32) made of another intermediate layer semiconductor material are disposed between the first semiconductor layer (9) and the second semiconductor layer (8), that the at least one other semiconductor layer (32) is disposed between the semiconductor intermediate layer (31) and the second semiconductor layer (8);

a band gap value of the intermediate layer semiconductor material is greater than the band gap value of the first semiconductor material and smaller than the band gap value of the second semiconductor material.

The at least one other semiconductor layer (32) is disposed between the semiconductor intermediate layer (31) and the second semiconductor layer (8); and

A band gap value of the other intermediate layer semiconductor material is greater than the band gap value of the intermediate layer semiconductor material and smaller than the band gap value of the semiconductor material. "--

B/ Claim 10.

-- "10. The heterobipolar transistor as claimed in claim 1, characterized in that a further semiconductor layer (7) borders on the second semiconductor layer (8) at a side remote from the semiconductor intermediate layers and that the further semiconductor layer (7) borders on the base (5). "--

Reason for allowance

5. Claims 1-5,7-8,10 are allowed.

The following is an examiner's statement of reason for allowance: None of the references of record teaches or suggests the claimed HETEROBIPOLAR TRANSISTOR having the limitations :

-- " a sequence of n ($n \geq 2$) stacked semiconductor intermediate layers (31, 32, 33) constituted by the semiconductor intermediate layer (31) and at least one other semiconductor layer (32) made of another intermediate layer semiconductor material are disposed between the first semiconductor layer (9) and the second semiconductor layer (8), that the at least one other semiconductor layer (32) is disposed between the semiconductor intermediate layer (31) and the second semiconductor layer (8);

a band gap value of the intermediate layer semiconductor material is greater than the band gap value of the first semiconductor material and smaller than the band gap value of the second semiconductor material.

The at least one other semiconductor layer (32) is disposed between the semiconductor intermediate layer (31) and the second semiconductor layer (8); and

A band gap value of the other intermediate layer semiconductor material is greater than the band gap value of the intermediate layer semiconductor material and smaller than the band gap value of the semiconductor material. "--

In combination with all other limitations as recited in claim 1.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thinh T Nguyen whose telephone number is 571-272-1790. The examiner can normally be reached on Monday-Friday 9:30am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached at 571-272-1907.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval [PAIR] system.


Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)

Thinh T Nguyen



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Andy Hughes
Primary Examiner